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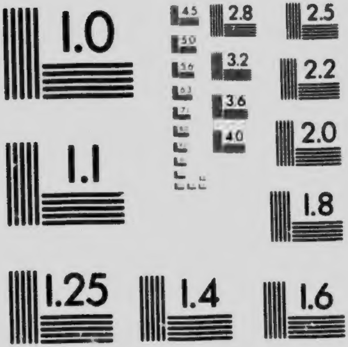
(ANSI and ISO TEST CHART No. 2)



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DEPARTMENT OF THE INTERIOR, CANADA
Hon. FRANK OLIVER, Minister: W. W. CORY, Deputy Minister
FORESTRY BRANCH—BULLETIN No. 12
R. H. CAMPBELL, Superintendent of Forestry

FOREST PRODUCTS OF CANADA

1909

PULP WOOD

COMPILED BY

H. R. MACMILLAN, B.S.A., M.F.

OTTAWA
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PULPWOOD CONSUMPTION, 1909.

The figures given for pulpwood consumption refer only to wood manufactured into pulp in Canadian mills. This wood is all of domestic origin. There is no pulpwood imported into Canada. The quantity of pulpwood exported from Canada during 1909 is shown in Table 6. The value given for pulpwood is the value at the mill. There are about ten mills in Canada from which no reports were received for 1909.

The fifty mills reporting, used in 1909 622,129 cords of wood. This is an increase of 139,352 cords or 28·9 per cent over the pulpwood consumption for 1908.

PULPWOOD CONSUMPTION BY PROVINCES.

In Table 1 are shown the quantity, total value and average value per cord of pulpwood used and tons of pulp produced in each province for the years 1908 and 1909.

TABLE 1.—Quantity, total and average Value of Pulpwood used, and Tons of Pulp produced, by Provinces, 1908 and 1909.

—	1908.				1909.			
PROVINCE.	Cords of Wood Used.	Value.	Average Value per Cord.	Tons of Pulp Produced[1]	Cords of Wood Used	Value.	Average Value per Cord.	Tons of Pulp Produced[1]
		$				$		
Canada	482,777	2,931,653	6·07	306,738	622,129	3,464,080	5·57	445,408
Quebec	255,943	1,466,521	5·73	201,450	319,935	1,866,700	5·83	238,286
Ontario	154,714	1,119,742	7·23	108,124	187,352	1,070,740	5·72	132,491
New Brunswick	54,058	265,924	4·94	36,711	88,450	414,689	4·69	49,991
Nova Scotia	18,062	79,466	4·39	16,794	25,076	101,945	4·07	23,996
British Columbia	(²)	....	....	....	1,316	10,006	7·44	644

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[1] Approximate.
[2] No pulp was manufactured in British Columbia prior to 1909.

Because of its extensive spruce forests, abundant water powers and plentiful supply of labour, Quebec is responsible for over one-half of the total pulpwood consumption of Canada. Quebec mills used 53 per cent of the pulpwood manufactured in Canada in 1908, and 51·4 per cent of the total in 1909. The percentages used in the other provinces were for 1908 and 1909, respectively: Ontario, 32·4 and 30·1; New Brunswick, 11·2 and 14·2; Nova Scotia, 3·4 and 4·1. British Columbia manufactured pulp for the first time in 1909, and used then only two-tenths of one per cent of the total amount of pulpwood consumed in Canada. The mills in British Columbia have not yet been running on full time, The average value of pulpwood per cord at the mill was less in 1909 than in 1908. The average for Canada was $6.07 per cord in 1908 and $5.57 in 1909. The decrease was common to all the provinces excepting Quebec where the price was $5.73 in 1908 and $5.84 in 1909. The greatest decrease was in Ontario; the average price fell $1.51 per cord, from $7.23 in 1908 to $5.72 in 1909.

Pulpwood was cheapest in 1908 in Nova Scotia at $4.07 per cord, and highest in British Columbia at $7.60 per cord. Over the area where 81·5 per cent of the wood was consumed, Ontario and Quebec, the average price varied only 11 cents per cord, the wood being cheaper by that amount in Ontario than in Quebec.

PULPWOOD CONSUMPTION BY SPECIES.

Two species, spruce and balsam, furnish 99 per cent of the wood used for pulp in Canada.

The quantity and value of these and the other woods used during 1909 is given in Table 2.

TABLE 2.—The Quantity and Value of Pulpwood used, by Species, 1908 and 1909.

Kind of Wood.	1908.			1909.		
	Quantity.	Value.	Per cent distribution.	Quantity.	Value.	Per cent distribution.
	cords.	$		cords.	$	
Total	482,777	2,931,653	100	622,129	3,464,086	100
Spruce	420,631	2,541,576	87·2	516,030	2,793,318	82·9
Balsam	57,821	369,915	11·9	100,095	637,065	16·1
Poplar	1,575	9,162	·3	5,188	30,135	·9
Hemlock[1]	....	....	....	700	3,156	·1
Jackpine[2]	2,750	11,000	·6	....	....	....
Unspecified[3]	....	....	....	116	406	(4)

(1) No hemlock w s reported for 1908.
(2) No jackpine was reported for 1909.
(3) Wood used in British Columbia for experimental purposes.
(4) Less than one-tenth of one per cent.

Spruce is the mainstay of the pulp industry. Over 516,000 cords of spruce were manufactured into pulp in Canada during 1909. This was over four-fifths of the total pulpwood consumption, and represented an increase of 22·7 per cent, or 95,399 cords over the domestic spruce consumption for 1908. The increase in the use of balsam was much greater. About one-sixth of the pulpwood used in 1909 was balsam; this was 73·1 per cent more than was used in 1908. The quantities used of the other three woods, poplar, hemlock and jackpine, are inconsiderable. Poplar is the most important of these; hemlock was used in the soda process in Quebec in 1909, but was not reported for 1908. Jackpine was used in the mechanical process in Quebec in 1908, but its use was not reported for 1909. A small quantity of wood of unspecified species was used in the experimental manufacture of soda pulp in British Columbia.

The average prices of the different woods used, as they indicate in some cases where the manufacturing companies own timber limits, the cost of logging and bringing to the mill, and not the purchase price, do not show the relative value of the different woods for pulp manufacture. It would seem, though, that balsam is quite as satisfactory for pulp manufacture as any other species, for both in 1908 and 1909 it represented a higher cost at the mill than any other species. The prices per cord were in 1909: balsam, $6.26; poplar, $5.81; spruce, $5.41; hemlock, $4.51. These prices are without exception lower than those ruling in 1908. The prices paid for the species used in 1908 were: balsam, $6.39; spruce, $6.04; poplar, $5.82; jackpine, $4.00. The wood showing the greatest change was spruce, the price of which decreased 10 per cent, or 63 cents per cord.

A small quantity of slabs and sawmill waste were used for pulp in 1908, but no such material was reported for 1909. In other countries the use of such material is usual, and seems to give satisfactory results. This economy will probably become general in Canada when the price of pulpwood increases. Immense quantities of slabs, edging and sawdust are yearly wasted.

PULPWOOD CONSUMPTION BY PROVINCES. SPECIES AND PROCESSES.

The extent to which different woods are used in different processes in each province is shown in Table 3.

Table 3.—Quantity of Pulpwood used in Canada, 1909, by Provinces, Species, and Processes.

QUANTITY OF PULPWOOD USED

Province.	Total.	Spruce.	Balsam.	Poplar.	Hemlock.
TOTAL—ALL PROCESSES.					
	Cords.	Cords.	Cords.	Cords.	Cords.
Canada	622,129	516,030	100,095	5,188	700
Quebec	319,935	230,584	84,651	4,000	700
Ontario	187,352	174,461	11,791	1,100	.....
New Brunswick	88,450	86,450	2,000	.....	.....
Nova Scotia	25,076	23,335	1,653	88	.....
British Columbia	(1) 1,316	(1) 1,200	.....	.....	.....
MECHANICAL PROCESS.					
Canada	37[illegible]	299,077	81,401	88	.....
Quebec	237,[illegible]	168,897	73,454	.....	.....
Ontario	98,394	94,100	4,294	.....	.....
Nova Scotia	25,076	23,335	1,653	88	.....
New Brunswick	19,745	17,745	2,000	.....	.....
SULPHATE PROCESS.					
Canada	231,422	209,728	18,694	3,000	.....
Ontario	87,858	80,361	7,497	.....	.....
Quebec	77,659	63,462	11,197	3,000	.....
New Brunswick	64,705	64,705	.....	.....	.....
British Columbia	1,200	1,200	.....	.....	.....
SODA PROCESS.					
Canada	10,141	7,225	.....	2,100	700
Quebec	4,925	3,225	.....	1,000	700
New Brunswick	4,000	4,000	.....	.....	.....
Ontario	1,100	.....	.....	1,100	.....
British Columbia	(1) 116	.....	.....	.....	.....

(1) 116 cords of unspecified wood used for experimental purposes.

Three-fifths or 60·8 per cent of the pulpwood manufactured in Canada was reduced by mechanical process; the sulphite process accounted for over one-third (37·2 per cent) of the wood used, and the remainder (2 per cent) was manufactured by the soda process.

Spruce was the chief wood used in each process of manufacture. Over one-half (57·9 per cent) of the spruce was used for mechanical pulp; two-fifths (40·6 per cent) was manufactured into sulphite pulp, and the remainder (1·5 per cent) was manufactured by the soda process. Balsam was used in the mechanical and sulphite processes only, and found greatest favour in the mechanical process; over four-fifths (81·3 per cent) of the balsam was used in the mechanical process. Poplar is not adapted for manufacture by the mechanical or grinding process; (98·3 per cent) of the poplar used was manufactured by the chemical processes, (57·8 per cent) in sulphite mills and (40·5 per cent) in soda mills. The soda process, though expensive, may be successfully used with more varieties of wood than the other processes. The small quantities of hemlock used was manufactured into soda pulp.

MECHANICAL PROCESS.

The manufacture of pulp by the mechanical process requires great water-power and a long fibred wood. Quebec, of all the Canadian provinces, best fulfils these conditions with its many waterfalls and extensive forests of spruce and balsam. Almost two-thirds (62·7 per cent) of the wood used in the mechanical process is manufactured in Quebec; one-quarter (25·9 per cent) is manufactured in Ontario, 6.2 per cent of the mechanical pulp is manufactured in Nova Scotia and 5·2 per cent in New Brunswick.

Spruce furnished 79·3 per cent of the wood used for mechanical pulp, the remainder was balsam. The average cord of wood reduced by the mechanical process in Canada in 1909 produced 1,651 pounds of pulp. This is almost twice as much per cord as is produced by the chemical processes.

SULPHITE PROCESS.

Ontario leads in the manufacture of sulphite pulp. Of the 231,422 cords of wood used in the sulphite process in 1909, 37·9 per cent was used inOntario, 33·6 per cent in Quebec, 27·9 per cent in New Brunswick and ·6 per cent in British Columbia.

Spruce formed 90·6 per cent of the wood used in the sulphite process, balsam 8·1 per cent and poplar 1·3 per cent.

The average production of pulp for every cord of wood used in the sulphite process was 914 pounds.

SODA PROCESS.

The soda process is not in general use in Canada. The four provinces manufacturing soda pulp with the percentage manufactured in each are: Quebec 48·6 per cent, New Brunswick 39·5 per cent, Ontario 10·8, and British Columbia 1·1 per cent. Spruce, poplar and hemlock were used in the manufacture of soda pulp; of the total, spruce formed 71·2 per cent, poplar 20·7 per cent, hemlock 7 per cent and wood manufactured as an experiment in British Columbia, 1·1 per cent.

The average pulp production per cord of wood used in the soda process was 961 pounds.

Many of the details of the pulp manufacturing business are here presented in tabular form.

TABLE 4.—SUMMARY of Pulpwood Consumption: Pulp produced and Quantity, Total Cost and Average Cost of Wood used by Processes, Species and Provinces.

—		Total.	Quebec	Ontario.	New Brunswick.	Nova Scotia.	British Columbia.
Number of mills		50	25	10	7	6	2
Pulp Produced—							
Aggregate	Tons.	445,408	238,286	132,491	49,991	23,996	644
Mechanical	″	325,609	198,576	84,286	18,751	23,996	
Sulphite	″	114,926	37,321	47,765	29,240		600
Soda	″	4,873	2,389	440	2,000		44
Wood Used—							
Aggregate	Cords.	622,129	319,935	187,352	88,450	25,076	1,316
Aggregate	Cost.	$3,464,080 00	1,866,700 00	1,070,740 00	414,689 00	101,945 00	10,006 00
Average	″	$ 5 57	5 83	5 72	4 69	4 07	7 44
Spruce—							
Total	Cords.	516,030	230,584	174,461	86,450	23,335	1,200
Total	Cost.	$2,793,318 00	1,293,748 00	[illegible]2,541 00	402,689 00	94,940 00	9,600 00
Average	″	$ 5 41	5 61	5 69	4 66	4 07	8 00
Mechanical	Cords.	299,077	163,897	94,100	17,745	23,335	
Sulphite	″	209,728	63,462	80,361	64,705		1,200
Soda	″	7,225	3,225		4,000		
Balsam—							
Total	Cords.	100,095	84,651	11,791	2,000	1,653	
Total	Cost.	$ 637,065 00	546,796 00	71,524 00	12,000 00	6,745 00	
Average	″	$ 6 26	6 46	6 07	6 00	4 08	
Mechanical	Cords.	81,401	73,454	4,294	2,000	1,653	
Sulphite	″	18,694	11,197	7,497			
Soda	″						
Poplar—							
Total	Cords.	5,188	4,000	1,100		88	
Total	Cost.	$ 30,135 00	23,000 00	6,875 00		260 00	
Average	″	$ 5 81	5 75	6 25		2 84	
Mechanical	Cords.	88				88	
Sulphite	″	3,000	3,000				
Soda	″	2,100	1,000	1,100			
Hemlock—							
Total	Cords.	700	700				
Total	Cost.	$ 3,156 00	3,156 00				
Average	″	$ 4 51	4 51				
Mechanical	Cords.						
Sulphite	″						
Soda	″	700	700				
Others—							
Total	Cords.	116					116
Total	Cost.	$ 406 00					406 00
Average	″	$ 3 50					3 50
Mechanical	Cords.						
Sulphite	″						
Soda	″	116					116

One-half the pulp mills of Canada are in Quebec, one-fifth in Ontario, and the remainder in the three provinces of New Brunswick, Nova Scotia and British Columbia. Measured by their average annual consumption of pulpwood, the largest mills are those of Ontario, which used 18,735 cords each in 1909. The average consumption per mill for 1909 was in Quebec 12,797 cords, in New Brunswick 12,636 cords, in Nova Scotia 4,179 cords and in British Columbia 658 cords. The average pulpwood consumption for Canada was 12,442 cords per mill per year, 73·1 per cent of the pulp manufactured was mechanical, 25·8 per cent sulphite and 1·1 per cent soda.

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EXPORTS.

Canada's foreign trade in wood pulp and pulpwood has consisted entirely of exports. Unfortunately the tendency has been to export wood in the raw form of pulp wood rather than in the manufactured form of wood pulp. The data in the following tables refer to the calendar years and have been furnished by the Department of Trade and Commerce.

TABLE 5.—Quantity and Value of Wood Pulp Exported, with chief Countries Importing, 1908 and 1909.

Kind of Pulp and Countries to which Exported.	1908.			1909.		
	Quantity.	Value.	Per cent	Quantity.	Value.	Per cent
	Tons.	$		Tons.	$	
Wood pulp exported - aggregate	239,805	4,070,928	100	[illegible]	4,898,842	100
Total mechanical pulp	199,118	2,523,736	83·3	241,750	3,378,225	86·1
Total chemical pulp	40,687	1,547,192	16·7	38,994	1,520,617	13·9
Mechanical Pulp—						
To United States	113,679	1,697,155	57·1	154,179	2,482,221	63·8
To United Kingdom	75,086	723,727	37·7	78,510	805,519	32·5
To other countries[1]	10,353	102,854	5·2	9,061	90,485	3·7
Chemical Pulp—						
To United States	32,326	1,150,422	79·5	37,336	1,459,340	95·7
To United Kingdom	7,519	359,812	18·5	1,049	42,007	2·7
To other countries[1]	842	36,958	2	609	19,270	1·6

[1] Includes in the order of their importance, as shown by exports for fiscal years 1908-09, France, Belgium, Mexico, Japan, China, Argentine and Cuba.

According to this about 63 per cent of the pulp produced in Canada is exported. The proportion of mechanical pulp exported is comparatively large; 86·1 per cent of the pulp exported in 1909 was mechanical pulp, whereas only 73·1 per cent of the pulp manufactured in Canada was mechanically prepared.

The average value per ton of the pulp exported in 1909 was $13.97 for the mechanical and $38.99 for chemical pulp. The average price for all the pulpwood exported was $17.45 per ton. The prices paid to Canadian exporters by the different importing countries were per ton, for chemical pulp, United Kingdom $40.04; United States $39.09; other countries $31.64; for mechanical pulp, United States $16.09; United Kingdom $10.26; other countries $9.98.

The pulp exports for 1909 were 40,939 tons greater or 17 per cent re than those for 1908. The increase was all in mechanical pulp; there was a decrease of 1,693 tons, or about 4 per cent, in the 1909 shipments of chemical pulp.

Each year the United States takes an increasing proportion of the pulp shipped from Canada. Excepting a slight increase in the export of mechanical pulp to the United Kingdom, the entire increase in the export of pulp for 1909 is due to the United States demand. The United States took 63·8 per cent of the mechanical pulp and 95·7 per cent. of the chemical pulp exported from Canada in 1909. There was a decrease of 86 per cent in shipment of chemical pulp to the United Kingdom for 1909. The shipment of all pulp to other countries also showed a decrease as compared with 1908.

During the seven fiscal years 1902 to 1908 inclusive the United States imported 776,289 tons of wood pulp from Canada; this was 70·3 per cent of the total wood pulp imports of that country for that period.

The pulp manufacturing industry has developed rapidly during the past decade. The value of the exports of pulp for the fiscal year 1899 was $1,274,376. The value of the exports for the fiscal year 1909 was $4,306,929. This represents an increase in ten years of about 238 per cent. The indications are that the development will be even more rapid in the immediate future.

The exports of pulpwood are relatively larger than those of manufactured pulp. All the pulpwood goes to the United States where it annually supplies 20 per cent or more of the quantity yearly consumed.

Table 6 gives a detailed statement of the relative quantities of pulpwood manufactured in Canada and exported.

TABLE 6—Quantity and Value of Pulpwood Domestically Manufactured and Exported Raw in 1908 and 1909.

—	1908.			1909.		
	Quantity.	Value.	Per cent	Quantity.	Value.	Per cent
	Cords.	$		Cords.	$	
Pulpwood produced in Canada	1,378,186	7,830,450	100	1,537,762	9,216,739	100
Domestically manufactured	482,777	2,931,625	0·35	622,129	3,464,080	40·5
[1] Exported in raw state	895,409	4,898,825	0·65	915,633	5,752,659	59·5

[1] All pulpwood exported since 1902 has gone to United States.

It is noticeable that more wood is exported than is manufactured at home. The figures for the quantity of wood domestically manufactured are more nearly correct for 1909 than those for 1908. In 1909 three-fifths of the pulpwood cut in Canada was shipped to the United States for manufacture. The consideration received for this 915,633 cords of wood was $5,752,659, or $6.28 per cord. This is an average value at the point of shipment of 71 cents per cord more than was paid by Canadian mills. Nearly all this wood went from Quebec; the average price received was only 45 cents per cord more than was paid by Quebec mills.

The wood exported from Canada was manufactured into 340,615 tons of mechanical pulp and 287,514 tons of chemical pulp. Forest Products Bulletin No. 10 issued by the United States Census Bureau shows that on the average in the United Sates a cord of wood produces about one ton of mechanical pulp or one-half ton of chemical pulp, and that 37·2 per cent of the wood imported is manufactured into mechanical pulp, 62·8 per cent. into chemical pulp.

As the United States imports much more pulp than it exports, it would necessarily have imported this pulp from Canada had it not imported the wood. Exporting the wood to the United States brought in $5,752,659. Exporting the pulp which that wood made would have brought, at the average prices paid by the United States importers in 1909, $16,719,418. If the manufacture were completed and the pulp made into paper in its final form before exporting the difference would be still greater.

The pulpwood shipped from Canada in 1909 furnished 46·4 per cent of the raw material used by the 90 pulp mills of New York State, 10·3 per cent of the raw material manufactured in the 62 pulp mills of New England, Maine, Massachusetts, New Hampshire and Vermont, and 6·1 per cent of the raw material used by the 16 pulp mills of Pennsylvania. A larger quantity of pulpwood was exported in 1909 than in 1908.

The manufacture of the 915,633 cords of wood exported in 1909 kept running at full capacity for the year 69 of the 251 pulp mills in the United States. If this pulpwood had been reduced to pulp in Canada, it would have supplied for the year 73 pulp mills of the average size of those already in Canada. The greater part of the pulpwood exported was cut in Quebec; if it had been manufactured in Quebec it would have kept running 71 mills of the same size as those now existing in Quebec.

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